FORM PTO-1390 (Modified) (REV 10-95) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: 775417.0004

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR): 09/462928

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/NZ98/00103	16 July 1998	16 July 1997

TITLE OF INVENTION

METHOD AND SYSTEM FOR COMPILING DEMOGRAPHIC DATA

APPLICANT(S) FOR DO/EO/US

O'CONNOR, Paul Michael

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
    A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☒ Certificate of Mailing by Express Mail
19. ☐ Other items or information:

1. Amendments made under PCT Article 34
2. Small Entity Statement

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
09/462928	PCT/NZ98/00103	775417.0004

20. The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

		CALCULATIONS PTO USE ONLY
☐ Search Report has been prepared by the EPO or JPO	$840.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482)	$670.00	
☐ No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))	$760.00	
☒ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO	$970.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	$96.00	

ENTER APPROPRIATE BASIC FEE AMOUNT =	$970.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	$0.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	30 - 20 =	10	x $18.00	$180.00	
Independent claims	2 - 3 =	0	x $78.00	$0.00	
Multiple Dependent Claims **(check if applicable).**			☐	$0.00	
TOTAL OF ABOVE CALCULATIONS =				$1,150.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable).** ☒				$575.00	
SUBTOTAL =				$575.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +				$0.00	
TOTAL NATIONAL FEE =				$575.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).** ☐				$0.00	
TOTAL FEES ENCLOSED =				$575.00	
				Amount to be: refunded	$
				charged	$

☒ A check in the amount of **$575.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. in the amount of to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **11-0321** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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David W. Poirier
SIGNATURE

David W. Poirier
NAME

43,007
REGISTRATION NUMBER

January 14, 2000
DATE

PTO/SB/09 (12-97)
Approved for use through 09/30/00. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR	Docket Number (Optional) RMWW-104

Applicant, Patentee, or Identifier: Paul M. O'Connor

Application or Patent No.: WO 99/04350

Filed or Issued: 16 July 1998

Title: METHOD AND SYSTEM FOR COMPILING DEMOGRAPHIC DATA

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☐ the specification filed herewith with title as listed above.
- ☒ the application identified above.
- ☐ the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ No such person, concern, or organization exists.
- ☐ Each such person, concern, or organization is listed below.

Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

Paul M. O'Connor		
NAME OF INVENTOR	NAME OF INVENTOR	NAME OF INVENTOR
Signature of inventor	Signature of inventor	Signature of inventor
13/1/2000		
Date	Date	Date

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

775417.0004 (RMWW-104) PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
O'CONNOR, Paul M.	)	
	)	Group Art Unit: TBA
Serial No.: TBA	)	
	)	
Int'l App. No.: PCT/NZ98/00103	)	Examiner: TBA
	)	
Filed: July 16, 1998	)	

For: **METHOD AND SYSTEM FOR COMPILING DEMOGRAPHIC DATA**

Box PCT
Assistant Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail having label number EL284429494US in an envelope addressed to: Box PCT Assistant Commissioner for Patents, Washington, D.C. 20231 on

14 January 2000
(Date of Deposit)

David W Poirier
Signature

14 January 2000
(Date of Signature)

IN THE CLAIMS:

Please amend the claims as follows:

In claim 6, lines 26-27, delete "any one of the preceding claims" and insert --claim 1-- therefor.

In claim 7, lines 29-30, delete "any one of the preceding claims" and insert

In claim 9, line 6, delete "any one of claims 1 to 6" and insert --claim 1-- therefor.

In claim 11, line 14, delete "any one of claims 1 to 6" and insert --claim 1-- therefor.

In claim 13, lines 22-23, delete "any one of the preceding claims" and insert --claim 1-- therefor.

In claim 14, line 25, delete "one of the preceding claims" and insert --claim 1-- therefor.

In claim 15, line 28-29, delete "any one of the preceding claims" and insert --claim 1-- therefor.

In claim 19, line 21, delete "any one of claims" and delete "to 18".

In claim 20, line 25, delete "any one of claims" and insert --claim-- therefor.

In claim 20, line 25, delete "to 19".

In claim 21, line 28, delete "any one of claims" and insert --claim-- therefor.

In claim 21, line 28, delete "to 20".

In claim 22, line 32, delete "any one of claims" and insert --claim-- therefor.

In claim 22, line 32, delete "to 21".

In claim 24, line 6, delete "any one of claims" and insert --claim-- therefor.

In claim 24, line 6, delete "to 21".

In claim 26, line 14, delete "any one of claims" and insert --claim-- therefor.

In claim 26, line 14, delete "to 21".

In claim 28, line 22, delete "any one of claims" and insert --claim-- therefor.

In claim 28, line 22, delete "to 27".

In claim 29, line 26, delete "any one of claims" and insert --claim-- therefor.

In claim 29, line 26, delete "to 28".

In claim 30, line 30, delete "any one of claims" and insert --claim-- therefor.

In claim 30, line 30, delete "to 29".

REMARKS

Consideration of the above identified application in view of the preceding amendments and following remarks is respectfully requested. Claims 1-30 are pending in this application. By this Amendment, Applicants have removed the multiple dependencies from the claims.

It is respectfully submitted that all of the claims now in this application, namely Claims 1-30, are in condition for allowance, and such action is earnestly solicited. If after reviewing this amendment, the Examiner believes that a telephone or personal interview would facilitate the resolution of any remaining matters the undersigned attorney may be contacted at the number set forth hereinbelow.

Respectfully submitted,

Date : January 14, 2000

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METHOD AND SYSTEM FOR COMPILING DEMOGRAPHIC DATA

BACKGROUND TO THE INVENTION

This invention relates to a method and system for compiling demographic data.

Merchants are currently left in the difficult situation of having little or no idea of customers' characteristics. Their advertising and promotions are at best aimed at a hunch of what will attract existing and prospective customers to purchase from them. The merchants do not have details of demographic characteristics of their customers, for example geographic location, professional status, family size, etc. They do not know what other merchants their customers also purchase products from, and the merchants do not know what value to place on individual customers.

The same problem may also be experienced with other forms of interactions between merchants and customers involving, for example, call centres, help desk enquiry services and other similar business.

Typically this information is only collected by large merchants either through their own customer database or through market research.

PRIOR ART

Methods and systems for building databases for marketing purposes are known in the art.

One form of system is described in US Patent No. 5,636,346. A method is described of creating a database or a modelled profile of information for customers of an advertiser. This database consists of subscriber names and address information and is compiled from actual cable system and telephone company billing records. The database is then licensed to data processing companies or their clients to be matched with their own customer databases. A target subscriber list is produced from subscribers in the modelled profile which are not already in the customer database, and these subscribers are targeted directly.

Another system is described in US Patent No. 5,305,196. A method is described for building a database for use in a retail store marketing program in which a customer's cheque is scanned to detect an account identification number. This unique identification number is then compared against a stored database of customer identification numbers maintained at that store. The database is then updated if necessary with additional identification criteria. A list of prospective customers of the retail store in a predetermined geographical area is obtained through conventional sources. The list of prospective customers is then compared with the list of regular customers and customers which appear in both lists are removed from the list of prospective customers. Advertising material may then be mailed directly to the remaining customers in the prospective customers list.

In the abovementioned prior art, the merchant is provided with little more than a list of customers toward which direct marketing may be focused. It would be particularly advantageous to provide the merchant with characteristics and other information about actual and prospective customers.

OBJECT OF THE INVENTION

An object of the present invention is to provide an improved method and system for compiling demographic data about customers.

DISCLOSURE OF THE INVENTION

Accordingly in one aspect the invention may be said to consist in a computer implemented method for compiling demographic data based on interactions between customers and merchants comprising the steps of storing in an interaction database interaction data representing interactions between customers and merchants, the interaction database comprising interaction data of interactions involving different merchants; storing in a demographics database demographic data representing existing and/or prospective customers of two or more merchants; updating the interaction database with interaction data obtained from interactions between customers and merchants; retrieving from the interaction and demographics databases data representing existing and/or prospective customers of one or more

merchants; and generating a report based on the data retrieved from the interaction and demographics databases.

In a further aspect the invention may be said to consist in a system for compiling demographic data, the system comprising a memory in which is maintained an interaction database of interaction data representing interactions between customers and merchants, the interaction database comprising interaction data of interactions involving different merchants; a memory in which is maintained a demographics database of demographics data representing existing and/or prospective customers of two or more merchants; updating means arranged to update the interaction database with interaction data obtained from interactions between customers and merchants; retrieving means arranged to retrieve from the interaction and demographics databases data representing existing and/or prospective customers of one or more merchants; and report generating means arranged to generate a report based on the data retrieved from the interaction and demographics databases.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the method and system will now be described with reference to the accompanying drawings in which:-

Fig. 1 shows a block diagram of the system of the invention;

Fig. 2 shows a block diagram of the system in a commercial transaction between a customer and merchant;

Fig. 3 shows a block diagram of the system in a communication between a customer and merchant;

Figure 4 shows the database schema of the invention;

Figure 5 illustrates a typical database entry;

(followed by page 3A)

Figure 6 shows the typical characteristics of a group of customers;

Figure 7 illustrates a typical analysis of customers by country;

Figure 8 shows further characteristics of a typical group of customers;

Figure 9 illustrates a geographical density map;

Figure 10 shows a typical customer value graph;

Figure 11 shows the merchants with which a typical merchant shares its customers; and

Figure 12 illustrates a table of repeat customers.

DISCLOSURE OF THE PREFERRED EMBODIMENTS

In the preferred form of the invention, as shown in Figure 1, the system 2 comprises a computer 3 having a data processor and memory, operating under the control of application software. The computer 2 communicates with at least one stored database 4. The database 4 may include an interaction database 6 and customer demographics database 8. It will be appreciated that the interaction database 6 and demographics database may be implemented as separate databases or as a single database. For simplicity the invention will be described with reference to database 4. The customer demographics database 8 may store data about existing customers and/or prospective customers. It will be appreciated that references to customers in the specification and claims may additionally include prospective customers.

Demographic characteristics of customers as used in the specification and appended claims may include geographic location, professional status, family size, age, gender, marital status, ethnicity, education and vocation. Also included within the scope of demographic characteristics may be psychodynamic or psychographic characteristics, and where the customer is a commercial business, demographic data could include the number of employees and the industry code of the business.

Database 4 may be stored in the memory of computer 3. Alternatively database 4 may be stored externally on one or more separate servers and accessed by dedicated and dial-up telecommunications facilities using e-mail, electronic data interchange (EDI) and/or communications via Internet web sites, or stored on CD-ROMS, floppy disks, tape drives, or other storage media. Alternatively the database 4 may be accessed with terminal emulation or Telnet facilities.

The data in database 4 may be contributed by a bank, financial institution, telecommunications or internet service provider, or some other third party, for example an entity operating a loyalty programme.

As shown in Fig. 1, a customer 12 interacts with a merchant 16 as shown in Fig. 1. Typically merchant 16 operates in a commercial premises or store from which customer 12 purchases goods or services. Alternatively merchant 16 may operate from strategically placed machines, for example vending machines, parking meters, laundry machines and transportation ticketing machines. Merchant 16 may also operate a mail order catalogue service, direct market goods or services, or network market through a hierarchy of distributors and resellers. As is becoming increasingly common, merchant 16 may alternatively operate from a website or other electronic medium.

As a further alternative merchant 16 may operate a help desk, call centre, or some other business in which customer 12 interacts with merchant 16 by telephone, facsimile, email, web browsing or other form of communication. It will be appreciated that the nature of business of merchant 16 includes a wide range of commercial activities.

Customer 12 may be a purchaser of goods or services from merchant 16. If merchant 16 operates a help desk or call centre, customer 12 may be a user of this service. Customer 12 may be a commercial or residential entity.

It will be appreciated that an interaction between customer 12 and merchant 16 may be initiated by either the customer 12 or by the merchant 16. As customer 16 interacts with merchant 16, the interaction generates interaction data 18 which may be stored in interaction database 6 as will be further described.

The invention will be first be described with reference to Fig. 2 in which the interaction comprises a retail transaction. For security and convenience it is becoming increasingly common for customer 12 to use a payment other than cash. One example is a credit card, in which a sales person either magnetically reads or makes an imprint of the card, calls a processing centre via a dial-up modem to obtain authorisation and verifies the cardholder's signature to prevent fraud.

Alternatively the customer 12 may provide the account number and expiry date of the credit card to a merchant 16 who is geographically separated from customer 12. Other alternatives to cash include cheques, electronic funds transfer (EFT-POS) cards, pre-paid money cards, credit, debit or charge cards, and integrated circuit or smart cards.

If a payment method other than cash is used then certain customer information is transferred from the customer 12 to the merchant 16. For example the customer information would include details of the customer's financial account to be debited. The merchant 16 transfers payment to the merchant's own financial institution 24 or other financial institution. Also sent to the financial institution 24 is transaction information which includes at least a merchant identifier, a customer identifier, a transaction amount and the date and time of the transaction.

The transaction between customer 12 and merchant 16 generates interaction data 18A. The interaction data 18A includes a merchant identifier. This merchant identifier may comprise the bank account number of merchant 16, or some other identifier. It will be appreciated that interaction data 18A could include further information about the merchant, for example geographic location. This information could be supplied by the merchant 16 or financial institution 24, and could be stored with the interaction data 18A or in database 4.

Interaction data 18A also includes a customer identifier. This customer identifier may comprise the bank account number of customer 16, or some other identifier. Again, interaction data 18A could include demographic data about the customer, for example geographic location, professional status, family size, etc. Also included, for example, could be psychodynamic or psychographic data. Where the customer is a commercial business, interaction data 18A could include the number of employees and the industry code of the business. Information about the customer could be supplied by the customer 12, the merchant 16, financial institution 24, and could be stored with the interaction data 18A or in database 4.

Interaction data 18A could also include, for example, the monetary value of the interaction, a goods/services identifier, and/or the date and time of the interaction.

As shown in Fig. 3, the interaction may be in the form of a communication between a customer 12 and a merchant 16. Merchant 16 may operate a help desk, call centre, or some other business in which customer 12 interacts with merchant 16. If the customer 12 interacts with merchant 16 by telephone or facsimile, the identities of both the customer 12 and merchant 16 are known by the telecommunication service provider (telco) 20 used to make the communication. A customer identifier and merchant identifier could be either generated or at least known to the telco 20 and could be supplied by the telco 20. Alternatively customer identifier and merchant identifier could be supplied by merchant 16 or customer 12. Merchant identifier and customer identifier could be the telephone/facsimile number of the merchant 16 and customer 12 respectively, or could be some other identifier.

Further information about merchant 16 and customer 12 could be included as discussed above with reference to Fig. 2. For example, interaction data 18B could include geographic information about the merchant 16, demographic, psychodynamic or psychographic data about the customer 12, and where the customer 12 is a business, details of the number of employees and industry code.

As discussed above with reference to Fig. 2, interaction data 18B could also include, for example, the monetary value of the interaction (if any), a goods/services identifier (if applicable), and/or the date and time of the interaction. Interaction data 18B could also include the duration of the communication.

Customer 12 may also interact with merchant 16 electronically. For example, customer 12 may send a message by email to merchant 16. Alternatively, merchant 16 may operate a web site which customer 12 may visit with a web browser. In this situation the identities of the customer 12 and merchant 16 are known by the internet service provider (ISP) 20 used to make the communication.

A customer identifier and merchant identifier could be either generated or at least known to the ISP 20 and could be supplied by the ISP 20. Alternatively customer identifier and merchant identifier could be supplied by merchant 16 or customer 12. Merchant identifier and customer identifier could be the internet address of the mercant 16 and customer 12 respectively, or could be some other identifier.

As discussed above, further information about merchant 16 and customer 12 could be included in interaction data 18B.

The merchant 16 may operate a loyalty programme, whereby a selected customer 12 is distinguished from other customers. Those customers who are members of the loyalty programme are often issued with identification cards. Interaction data 18, 18A, or 18B could include the fact the customer 12 is a member of the loyalty programme.

The invention will now be described in the context of a retail transaction. It will be appreciated that the scope of the invention is not limited to retail transactions and includes other forms of interaction as discussed above with reference to Figs. 1 to 3.

The computer 3 may have in its database 4 information about particular merchants, for example those merchants in a common industry. This information may include the name and address of the merchant 16 and the nature of the merchant's business. The information held by the computer 3 about a merchant 16 is shown in Figure 4 as merchant data 22. While not necessary, the merchant data 22 may be indexed by merchant identifier 24 to assist in processing.

The computer 3 also has information about individuals who may use the merchant 16. For example the computer 3 may have a record of the income, age, gender, marital status, ethnicity, education, telephone numbers, residential address and vocation of individuals. The residential address may be specifically defined, or may be an arbitrarily defined geographical area, mesh block, geocode or census area unit. Each individual may be a customer 12 of merchant 16. This information is shown in Figure 4 as customer data 26. Customer data 26 may be indexed by customer identifier 28.

As a customer 12 interacts with merchant 16, interaction data is stored as transaction data 30. An example is shown in Figure 4.

Each transaction can only have one merchant, while individual merchants can have more than one transaction. The relationship of the transaction data 30 to merchant

data 22 is therefore many-to-one. Similarly, each transaction can have only one customer, while individual customers can have more than one transaction. The relationship of the transaction data 30 to customer data 26 is therefore also many-to-one.

The computer 3 may have access to all information contained in merchant data 22, customer data 26 and transaction data 30. From this data it is possible to produce reports for a merchant 16 giving the merchant 16 detailed information about its customers 12. For example, it is possible to estimate the average annual salary of the national population. It is also possible to identify the customers 12 of merchant 16 based on the accumulated transaction data 30 and therefore estimate the average income of customers 12 of a particular merchant 16. Information such as this is very valuable to merchant 16 as it then knows where to focus marketing efforts. It is also possible to provide merchant 16 with other demographic characteristics of its customers 12 as discussed above.

In some circumstances a number of other parties may each transmit certain data to computer 3, so that merchant 16 can obtain further information about its customers 12.

Based on characteristics of customers 12, it is possible to provide merchant 16 with customer segmentation data. For example the merchant 16 may be provided with the proportion of its customers who are in a particular income range to assist in developing marketing strategies.

It is also possible to provide details of the customers 12 a particular merchant 16 shares with other merchants. The transaction data 30 includes a merchant identifier and a customer identifier. Based on this information the proportion and characteristics of customers 12 a merchant 16 shares with competing merchants can be determined. A merchant 16 may then have an idea of its market share and know the types of customers 12 on which to focus marketing initiatives. It is also possible to provide the merchant 16 information about the customers 12 the merchant 16 shares with merchants in other markets. This would allow, for example, a fast food retailer to assess the merits of joint advertising with a petrol station if the merchants share a large proportion of customers.

The transaction data 30 may also include temporal data, for example the date and time of transactions. It is therefore possible to identify the date and time different customer types are likely to purchase goods or services from merchant 16.

In a preferred form of the invention the computer 3 includes a stored database of customer locations, including residential addresses, post codes and telephone numbers. From this information it is possible to produce density maps of customer types of merchant 16 based on the geographical locations, post codes and/or telephone numbers of customers 12. The scale of these density maps may be local, regional, national or global.

Although not strictly necessary, in a further preferred form of the invention the computer 3 includes a stored database of transaction amounts of transactions between customers 12 and merchants 16 as shown in Figure 4. From this information the characteristics of a merchant's customers from which the merchant derives the most revenue, or most valued customers can be determined.

Where appropriate, the transaction details may also include a product identification code. This allows the quantity and characteristics of products purchased by customers 12 to be determined. For example, a merchant 16 who does not sell a particular product may be interested to know that a competitor is selling large quantities of the product. If the merchant 16 offered the same product for sale then customers may purchase products from merchant 16 instead of the competitor.

The product identification code is also useful in evaluating the response to the use of coupons. Generally, coupons are issued to existing customers or are distributed to a particular geographical region. Coupons generally offer a discount on subsequent purchases, or additional complimentary goods or services with subsequent purchases. Using the product identification code it is possible to determine the characteristics of customers who present coupons and the characteristics of customers who do not.

In addition to the above information, it also possible to obtain specific information on companies or industries. From the information in the computer 3, comparisons

may be made of characteristics of the customers 12 of a merchant 16 in one population with those of another population. This information would be valuable to a merchant 16 introducing a product into a new market who needs to know how well the product has been received in other countries.

As stated above the transaction data 30 may include temporal data. The reports may be generated periodically and changes in a merchant's customer base over time can be identified and reported. This use of temporal data is particularly useful in evaluating the success or otherwise of general promotional activity, for example the sale of goods or services at reduced prices.

The reports may be presented to the merchant 16 by paper, oral/visual presentation or electronically for example email or secured web access. In a preferred embodiment of the invention the merchant 16 may select which information it requires about its customer base.

In the preferred form of the invention demographic data 32 is produced from information held by the computer 3. However, other data sources may also be used, for example census data, customer databases, demographic information held by other parties, other customer transactions, product descriptions and merchant databases.

The system 2 may be tailored to satisfy confidentiality or privacy requirements. For example, details of individual customers may be omitted from merchant reports. Additionally, details of individual merchants may be omitted for reasons of commercial confidentiality.

As shown in Figure 5, a customer has purchased goods from the fictitious company Flowers R Us. The appropriate entries have been made in merchant data 22, customer data 26 and transaction data 30. A customer having the unique identifier CUST1, residing in Roseneath, Wellington, New Zealand has purchased flowers to the value of NZ$35 from Flowers R Us, a merchant having the unique identifier MERC1. Based on a number of these transactions, it is possible to produce detailed and commercially useful reports for the merchant 16.

Figure 6 shows an example of a report which may be produced for the merchant 16 illustrating general characteristics of Flowers R Us customers. For example the customers are likely to have qualifications and not likely to be unemployed. Characteristics such as these are available to the computer 3 from database 4 or from other sources and so it is possible to determine that Flowers R Us customers have these characteristics.

As shown in Figure 7, most of Flowers R Us customers, namely 87.2%, live in New Zealand. This gives the merchant 16 ideas about where to focus its advertising. The nature of this business means that smaller proportions of customer are resident in other countries, although this will not necessarily be the case for other types of business, for example in the travel booking and reservations industry.

Figure 8 shows a further example of characteristics of customers. For simplicity, customers are placed in one of 14 customer types, for example "educated money" or "single and separate". It is possible to estimate from the information in the computer 3 that 8.25% of New Zealanders are of the type "educated money", and that 5.51% are of the type "single and separate". Based on geographical data about its customers, it may be determined that 11.53% of the population living in the same region as merchant 16 are of type "educated money" and 7.91% are of type "single and separate". Based on transaction data it is possible to work out that 14.63% of Flowers R Us customers are of type "educated money". Furthermore, it is also possible to estimate the proportion of Flowers R Us "educated money" customers to those "educated money" types living in the same region. For example 14.63% of Flowers R Us customers are of type "educated money" and 11.53% "educated money" types live in the same region. The proportion is 126.89%.

The invention allows the production of detailed geographical density maps as shown in Figure 9. In the example shown, all the customers of merchant 16 have been identified. The computer 3 has geographical data about these customers, and this data may be presented as a density map. This map shows the areas of the country in which Flowers R Us customers live, and would provide a focus for regional or localised advertising.

Figure 10 shows a customer value graph produced with the invention. As shown in the graph, 17% of Flowers R Us customers represent 48% of the merchant's transactions. It is also possible to work out from this information the value of these 17% of customers based on the value of the transactions.

As shown in Figure 11, it is possible to provide Flowers R Us with the proportion of customers 12 it shares with other merchants. For example, 35.9% of Flowers R Us customers are also customers of Peter's Petrol Limited. The merchant 16 may consider joint advertising with Peter's Petrol Limited to reduce advertising expenditure, as the two merchants share a large customer base which would be reached by the advertising. It is also possible to provide Flowers R Us with the proportion of customers it shares with competitors.

A further report is illustrated in Figure 12, showing information of repeat purchases by customers. Of Flowers R Us customers, 34% have purchased goods or services once from Flowers R Us, 26% purchased twice, and so on. This information may also be combined with information about products and other information.

According to this invention, a method and system for compiling demographic data is provided. The method used allows a financial institution, third party, or merchant to compile demographic data easily, allowing merchants to understand their existing customers better and attract prospective customers.

CLAIMS:

1. A computer implemented method for compiling demographic data based on interactions between customers and merchants comprising the steps of:

storing in an interaction database interaction data representing interactions between customers and merchants, the interaction database comprising interaction data of interactions involving different merchants;

storing in a demographics database demographic data representing existing and/or prospective customers of two or more merchants;

updating the interaction database with interaction data obtained from interactions between customers and merchants;

retrieving from the interaction and demographics databases data representing existing and/or prospective customers of one or more merchants; and

generating a report based on the data retrieved from the interaction and demographics databases.

2. A computer implemented method as claimed in claim 1 wherein the interaction database and the demographics database are maintained as separate databases.

3. A computer implemented method as claimed in claim 1 wherein the interaction database and the demographics database are maintained as a single database.

4. A computer implemented method as claimed in any one of the preceding claims wherein the interaction data includes a customer identifier and a merchant identifier.

5. A computer implemented method as claimed in any one of the preceding claims wherein the interaction data includes date and/or time data.

6. A computer implemented method as claimed in any one of the preceding claims wherein one or more interactions has a monetary value, and the interaction data obtained from the interaction includes the monetary value.

7. A computer implemented method as claimed in any one of the preceding claims wherein the interactions stored in the interaction database comprise commercial transactions between customers and merchants.

8. A computer implemented method as claimed in claim 7 wherein the customer identifier and the merchant identifier comprise an account number of the customer identifier or merchant identifier, the customer identifier and merchant identifier being obtained by one or more financial institutions from the commercial transactions.

9. A computer implemented method as claimed in any one of claims 1 to 6 wherein the interactions stored in the interaction database comprise communications between customers and merchants provided by one or more telecommunications service providers.

10. A computer implemented method as claimed in claim 9 wherein the customer identifier and merchant identifier comprise telephone numbers, the customer identifier and merchant identifier being obtained by the telecommunications service providers.

11. A computer implemented method as claimed in any one of claims 1 to 6 wherein the interactions stored in the interaction database comprise data network communications between customers and merchant, provided by one or more data network service providers.

12. A computer implemented method as claimed in claim 11 wherein the customer identifier and the merchant identifier comprise data network addresses, the customer identifier and the merchant identifier being obtained by the data network service providers.

13. A computer implemented method as claimed in any one of the preceding claims wherein the report is based on census data in addition to data retrieved from the interaction and demographics databases.

14. A computer implemented method as claimed in one of the preceding claims wherein the report includes demographic data representing the customers of a merchant.

15. A computer implemented method as claimed in any one of the preceding claims wherein the report includes demographic data representing the customers of two or more merchants.

16. A system for compiling demographic data, the system comprising:

a memory in which is maintained an interaction database of interaction data representing interactions between customers and merchants, the interaction database comprising interaction data of interactions involving different merchants;

a memory in which is maintained a demographics database of demographics data representing existing and/or prospective customers of two or more merchants;

updating means arranged to update the interaction database with interaction data obtained from interactions between customers and merchants;

retrieving means arranged to retrieve from the interaction and demographics databases data representing existing and/or prospective customers of one or more merchants; and

report generating means arranged to generate a report based on the data retrieved from the interaction and demographics databases.

17. A system as claimed in claim 16 wherein the interaction database and the demographics database are maintained as separate databases.

18. A system as claimed in claim 16 wherein the interaction database and the demographics database are maintained as a single database.

19. A system as claimed in claim any one of claims 16 to 18 wherein the interaction data stored in the interaction data stored in the interaction database includes a customer identifier and a merchant identifier.

20. A system as claimed in any one of claims 16 to 19 wherein the interaction data includes date and/or time data.

21. A system as claimed in any one of claims 16 to 20 wherein one or more interactions has a monetary value, and the interaction data obtained from the interactions includes the monetary value.

22. A system as claimed in any one of claims 16 to 21 wherein the interactions stored in the interaction database comprise commercial transactions between customers and merchants.

23. A system as claimed in claim 22 wherein the customer identifier and the merchant identifier comprise an account number of the customer identifier or merchant identifier, the customer identifier and merchant identifier being obtained by one or more financial institutions from the commercial transactions.

24. A system as claimed in any one of claims 16 to 21 wherein the interactions stored in the interaction database comprise communications between customers and merchants provided by one or more telecommunications service providers.

25. A system as claimed in claim 24 wherein the customer identifier and merchant identifier comprise telephone numbers, the customer identifier and merchant identifier being obtained by the telecommunications service providers.

26. A system as claimed in any one of claims 16 to 21 wherein the interactions stored in the interaction database comprise data network communications between customers and merchants provided by one or more data network service providers.

27. A system as claimed in claim 26 wherein the customer identifier and the merchant identifier comprise data network addresses, the customer identifier and the merchant identifier being obtained by the data network service providers.

28. A system as claimed in any one of claims 16 to 27 wherein the report generating means is arranged to generate a report based on census data in addition to data retrieved from the interaction and demographics databases.

29. A system as claimed in any one of claims 16 to 28 wherein the report generating means is arranged to generate a report based on data including demographic data representing the customers of a merchant.

30. A system as claimed in any one of claims 16 to 29 wherein the report generating means is arranged to generate a report based on data including demographic data representing the customers of two or more merchants.

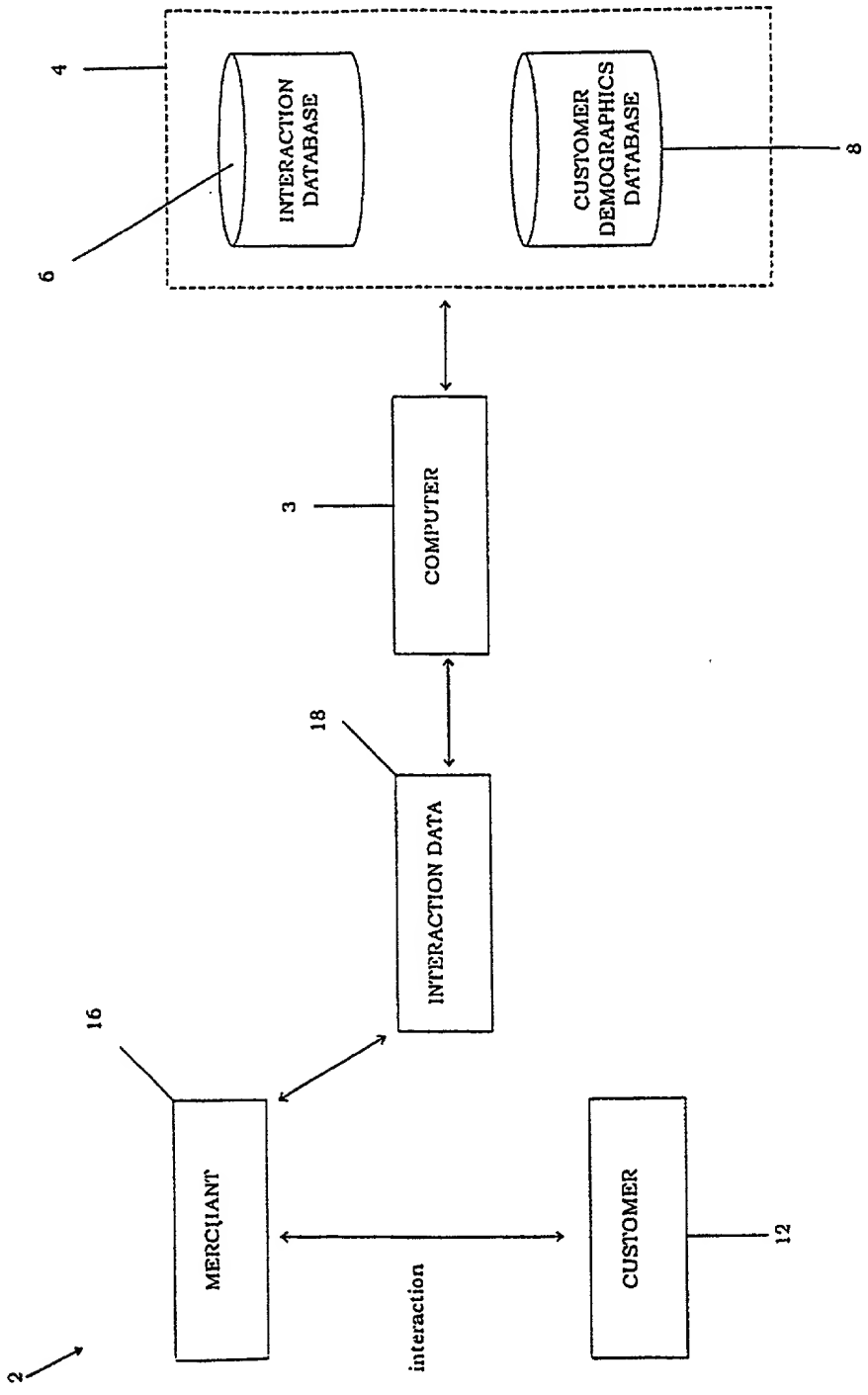
4
INTERACTION DATABASE
CUSTOMER DEMOGRAPHICS DATABASE
8
6
COMPUTER
3
18
INTERACTION DATA
16
MERCHANT
CUSTOMER
12
interaction
2

Figure 1

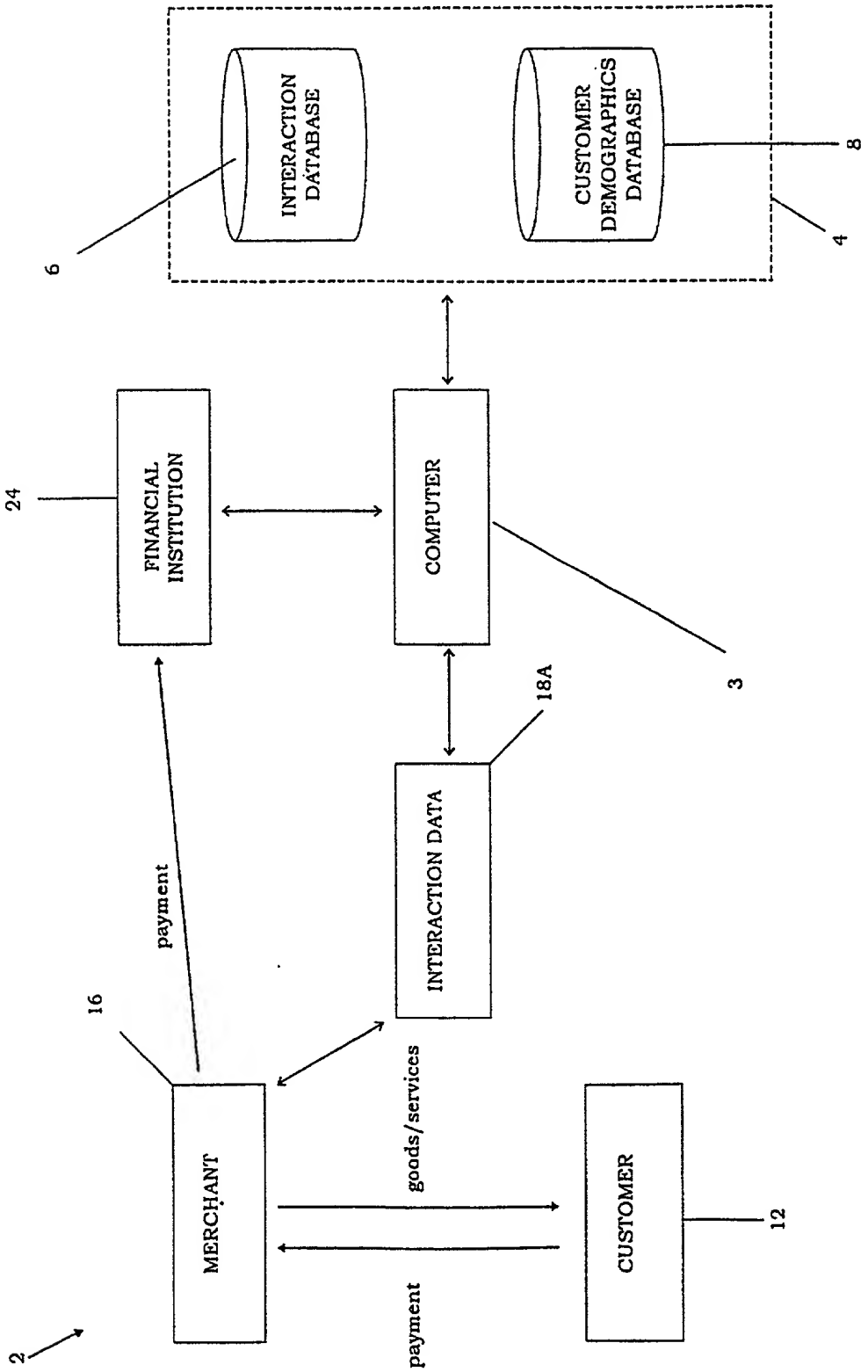
INTERACTION DATABASE
CUSTOMER DEMOGRAPHICS DATABASE
6
8
4
FINANCIAL INSTITUTION
COMPUTER
24
3
18A
INTERACTION DATA
payment
16
MERCHANT
goods/services
CUSTOMER
12
payment
2

Figure 2

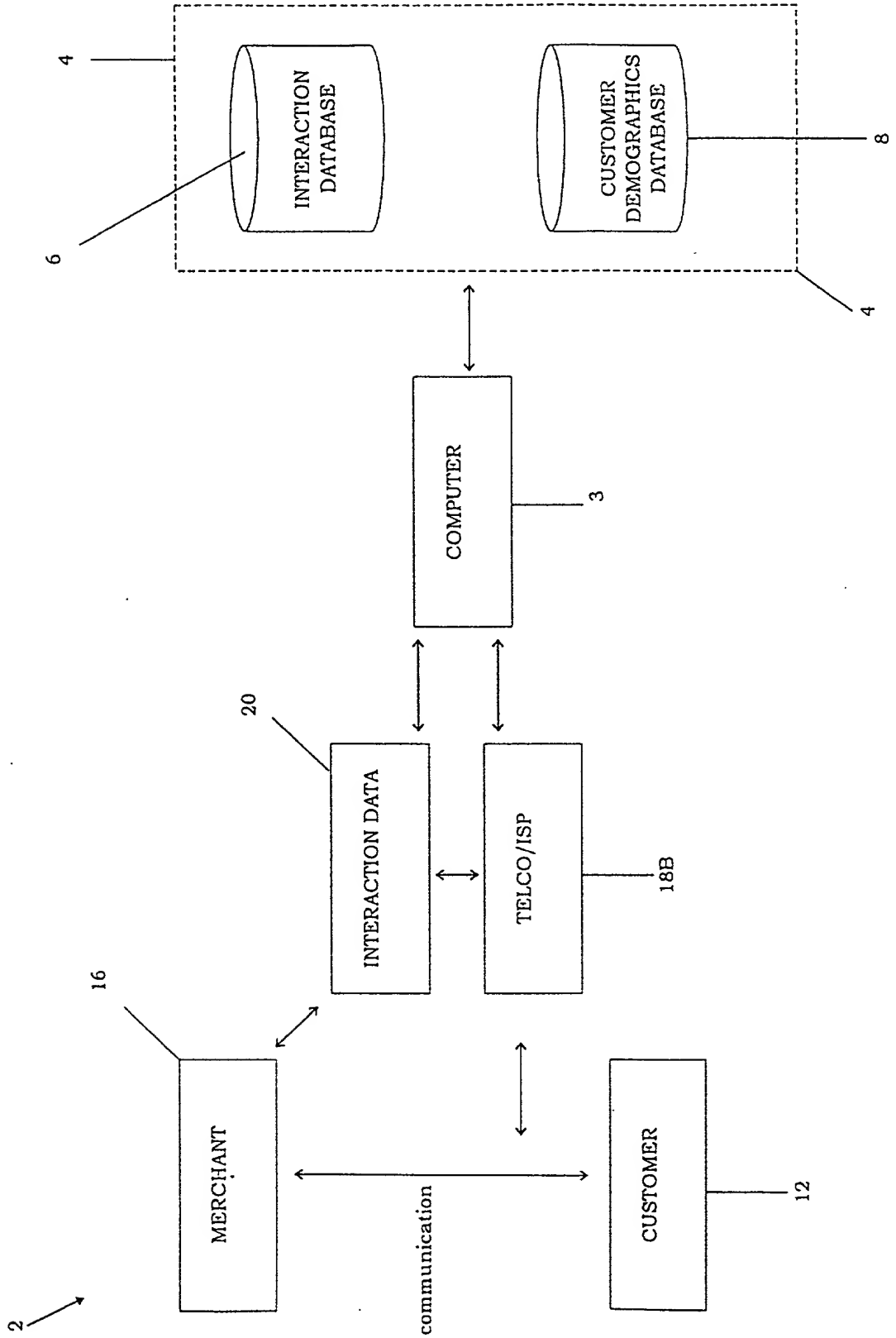
4
INTERACTION DATABASE
CUSTOMER DEMOGRAPHICS DATABASE
8
6
4
COMPUTER
3
20
INTERACTION DATA
TELCO/ISP
18B
16
MERCHANT
communication
CUSTOMER
12
2

Figure 3

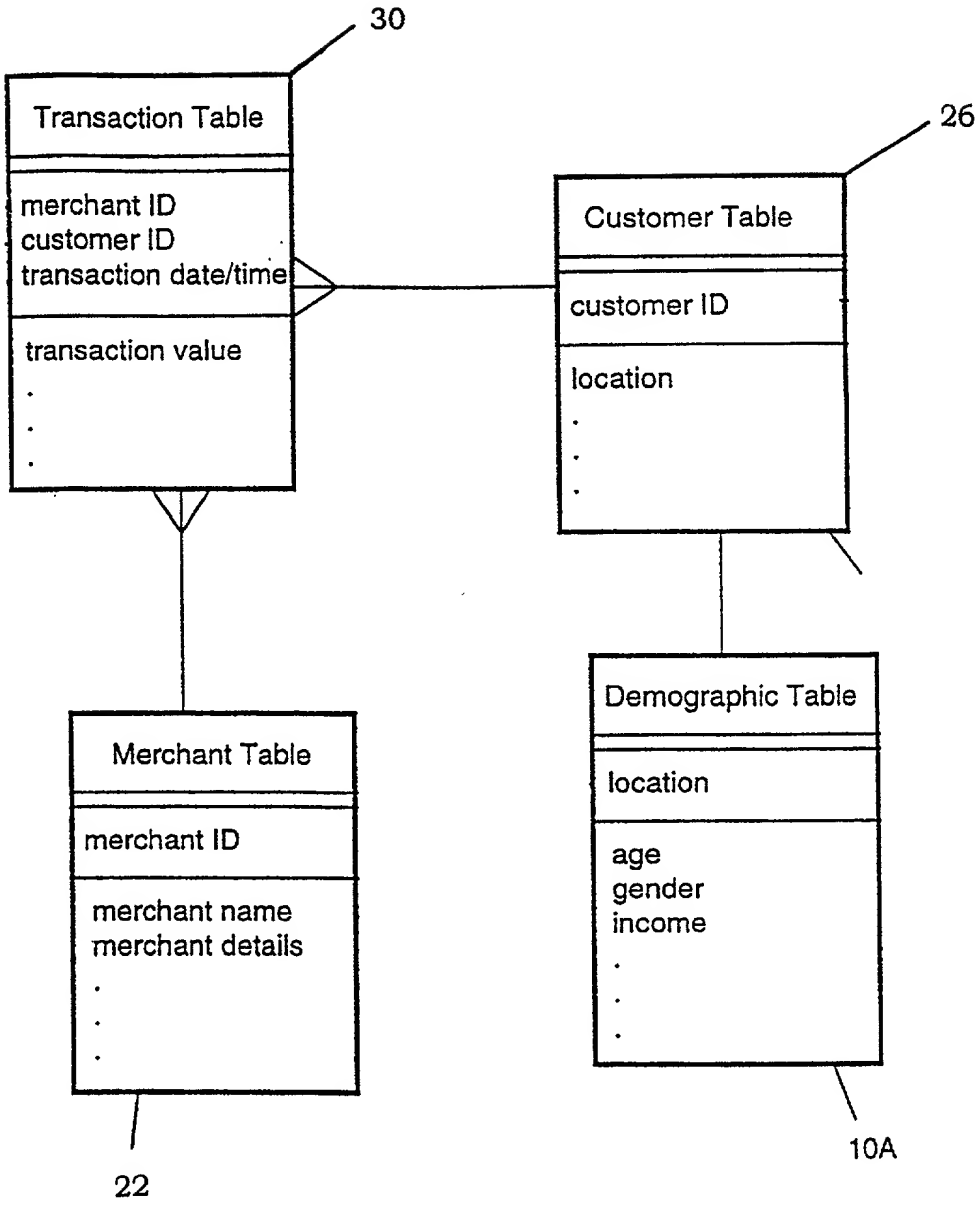
30
Transaction Table
merchant ID
customer ID
transaction date/time
transaction value
26
Customer Table
customer ID
location
Merchant Table
merchant ID
merchant name
merchant details
Demographic Table
location
age
gender
income
22
10A

Figure 4

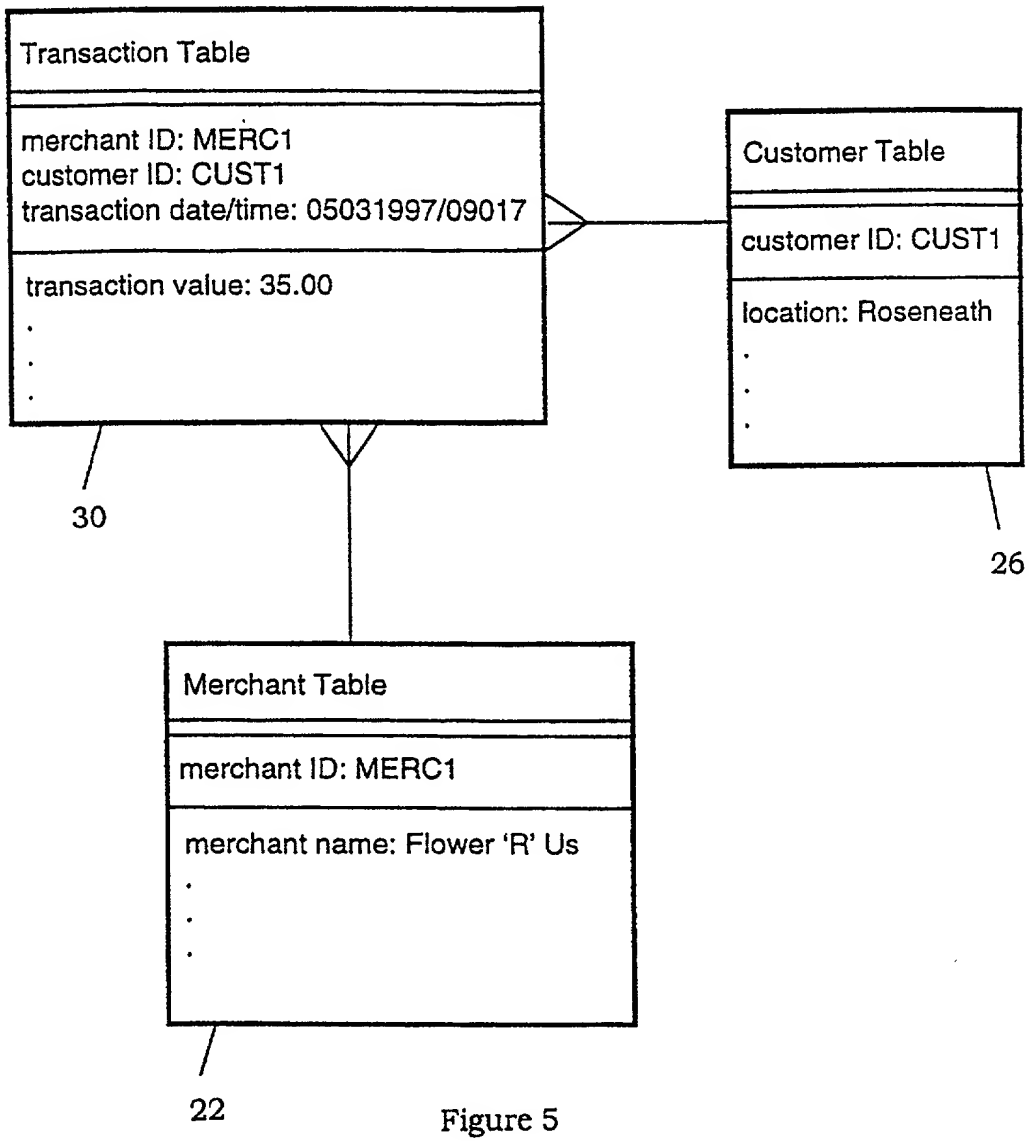
Transaction Table
merchant ID: MERC1
customer ID: CUST1
transaction date/time: 05031997/09017
transaction value: 35.00
Customer Table
customer ID: CUST1
location: Roseneath
Merchant Table
merchant ID: MERC1
merchant name: Flower 'R' Us
30
26
22

Figure 5

General Demographics

Flowers R Us customers are in general

- Low numbers of Maori and Pacific Islanders
- Likely to have qualifications
- Less likely to be unemployed
- Less likely to be on income support
- Likely to have access to a motor vehicle
- Most likely to have access to two or more motor vehicles
- Likely to own their own homes
- Unlikely to earn $15,000 or less
- Very likely to earn $40,000 or more
- Average personal income $22,000
- Average household income $15,000
- Predominantly aged between 25 to 45 years old
- Least likely to have income between $5,000 & $10,000
- Most likely to have income over $30,000
- More likely to be self employed or an employer of others
- More likely to in administrative type employment
- Most likely to be in "White Collar" employment

Figure 6

Flowers R Us Customer Countries

Country	% of Customers
New Zealand	87.2
Australia	5.5
Japan	2.4
USA	1.7
Other	3.2

Figure 7

Flowers R Us Customer Types

Customer Type	NZ %	Your Regional %	Your Customers %	Your Customers in Region %
Educated Money	8.25	11.53	14.63	126.89
Inner City Professional	3.24	8.02	12.28	153.12
High Income Upwardly Mobile	5.14	11.01	19.09	173.39
White collar	9.19	12.35	14.26	115.47
Young Families in New Housing	6.31	5.54	2.46	44.40
Outer Suburban Families	9.27	4.70	2.18	46.38
Urban Singles	5.94	6.90	9.24	133.91
Provincial Middle NZ Families	6.95	0.03	0.00	0.00
Rural Lands	7.01	0.00	0.00	0.00
Coastal and Lake Retirement	4.78	0.04	0.00	0.00
Older Retirees Living Alone	8.13	7.92	2.68	33.84
Blue Collar Suburbia	14.69	15.32	6.02	39.30
Single and Separate	5.51	7.91	15.91	201.14
Maori & Pacific Is. Families	5.59	8.73	1.25	14.32
Totals	100.00	100.00	100.00	

Figure 8

Flowers R Us Geographical Density Maps

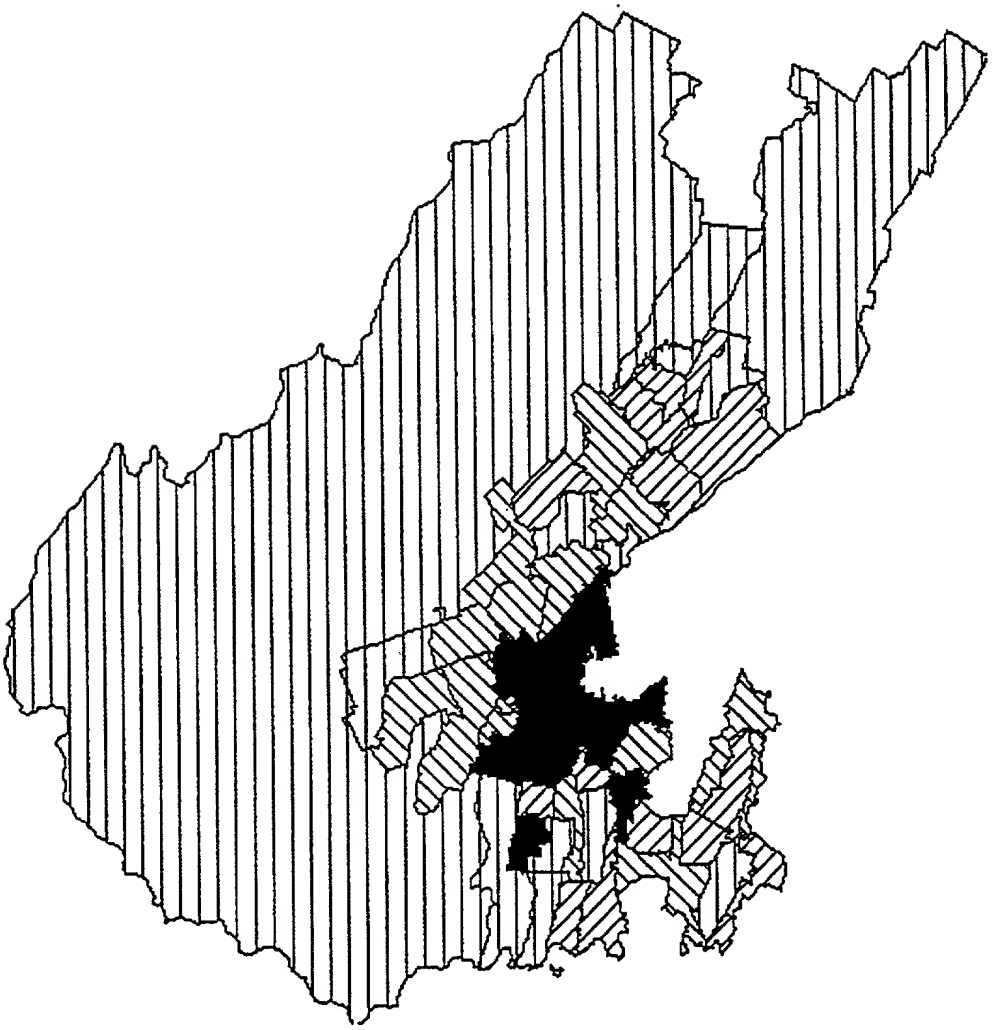

Figure 9

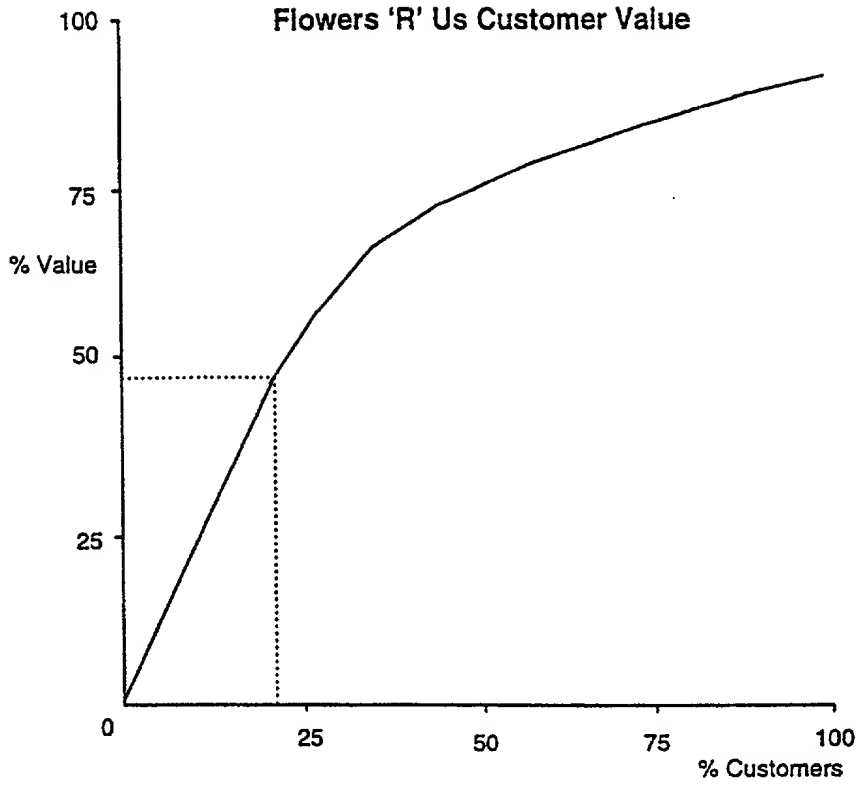
Flowers 'R' Us Customer Value
100
75
% Value
50
25
0
25
50
75
100
% Customers

Figure 10

Merchants

Flowers R Us customers are also customers of the following merchants

Merchant	% of your customers over
Peter's Petrol Ltd	35.9%
Jay's Jeans	32.4%
Bob's Bar	24.7%
Simon's Supermarket	24.4%
Design Shop	21.0%
Pizza 2 Go	19.5%
Ken's Cabs	14.3%

Figure 11

Repeat Purchases

	% of Customers
1 Purchase	34
2 Purchases	26
3 Purchases	12
4 Purchases	11
5+ Purchases	17

Figure 12

ATTORNEY DOCKET NO.: RMWW-104

Declaration, Power of Attorney, and Petition

As a below named inventor, I/we hereby declare that:

My/Our residence, post office address and citizenship is/are as stated below next to my/our name(s),

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD FOR COMPILING DEMOGRAPHIC DATA, the specification of which *(check one)*

☐ is attached hereto; or

☐ was filed on ____ as Application Serial No. _____ and was amended on _____ (if applicable); or

PCT FILED APPLICATION ENTERING NATIONAL STAGE

☒ was described and claimed in International Application No. WO 99/04350 filed on 16 July 1998 and as amended on _____ (if applicable).

I/We hereby state that I/we have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above, and that it contains a full, clear, concise and exact description of the subject matter for which a patent is sought.

I/we acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

Prior Application(s)

☒ (Check if applicable) I/We hereby claim foreign priority benefits under Title 35, United States Code § 119, by checking the box(es) below, any foreign application(s) for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Claimed			Priority	
328355	New Zealand	16 July 1997	[x] Yes	[ ] No
(Number)	(Country)	Day/month/year filed		
			[ ] Yes	[ ] No
(Number)	(Country)	Day/month/year filed		

☐ (Check if applicable) I/We hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

Prior Provisional Application(s)

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

(*Note:* When the nonprovisional application is entitled to an earlier U.S. effective filing date of one or more provisional applications under Title 35, United States Code § 119(e), a statement such as "This application claims the benefit of U.S. Provisional Application No. _____, filed _____, and U.S. Provisional Application No. _____, filed _____." should appear as the first sentence of the description. In view of this requirement, the right to rely on a prior application may be waived or refused by an applicant by refraining from inserting a reference to the prior application in the specification of the later one.)

☐ (Check if applicable) I/We hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I/we acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U.S. Application(s)

(Application Serial No.)	(Filing Date)	Status (Patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	Status (Patented, pending, abandoned)

☐ (Check if applicable) I/We hereby authorize the U.S. attorneys or agents named herein to accept and follow instructions from _____ as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys or agents named herein and myself/ourselves. In the event of a change, I/we will notify in writing the U.S. attorney or agent named herein.

☐ (Check if applicable) In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I/We hereby declare that all statements made herein of my/our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I/we hereby appoint the attorneys whose names are associated with United States Patent and Trademark Office Customer Number 21832:

Barry Kramer, Reg. No. 20,622
Martha B. Allard, Reg. No. 36,730
Mark Giarrantana, Reg. No. 32,615
James W. Jakobsen, Reg. No. 38,505
Jeffrey J. Miller, Reg. No. 39,773
Steven J. Moore, Reg. No. 35,959
Basam E. Nabulsi, Reg. No. 31,645
R. Thomas Payne, Reg. No. 30,674
David W. Poirier, Reg. No. 43,007
Scott D. Wofsy, Reg. No. 35,413

of the firm of CUMMINGS & LOCKWOOD, whose address is Four Stamford Plaza, P.O. Box 120, Stamford, Connecticut 06904-0120, as my/our attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Telephone calls should be directed to Ms. Fitzgerald by dialing (203) 782-3004.

Wherefore I/we pray that Letters Patent be granted to me/us for the invention or discovery described and claimed in the foregoing specification and claims, and I/we hereby subscribe my name to the foregoing specification and claims, declaration, power of attorney, and this petition.

100

Full name of first inventor: Paul Michael O'Connor
Residence: Wellington, New Zealand
Citizenship: NZX New Zealand
Post Office Address: 205 Wakefield Street
Inventor's signature Paul O'C Date: 13/1/2000

Full name of second inventor: _____
Residence: _____
Citizenship: _____
Post Office Address: _____

Inventor's signature _____ Date: _____

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